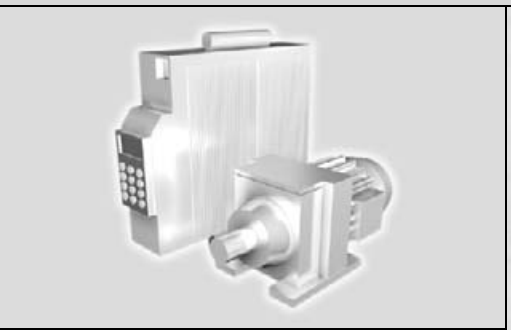
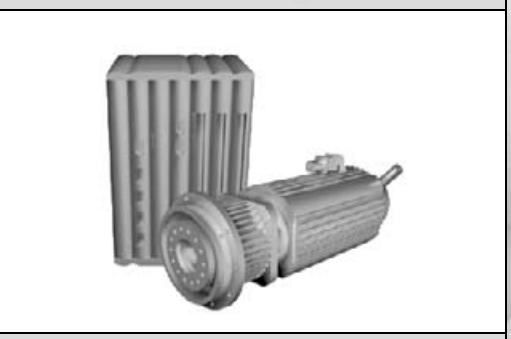
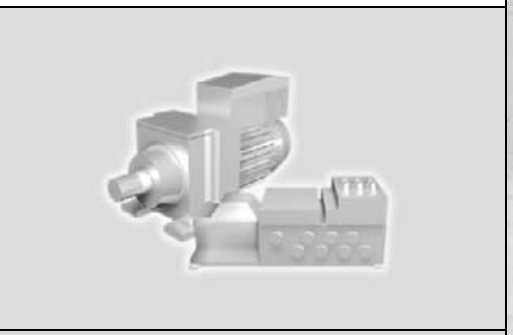
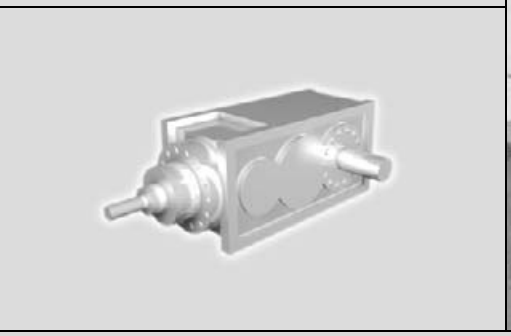
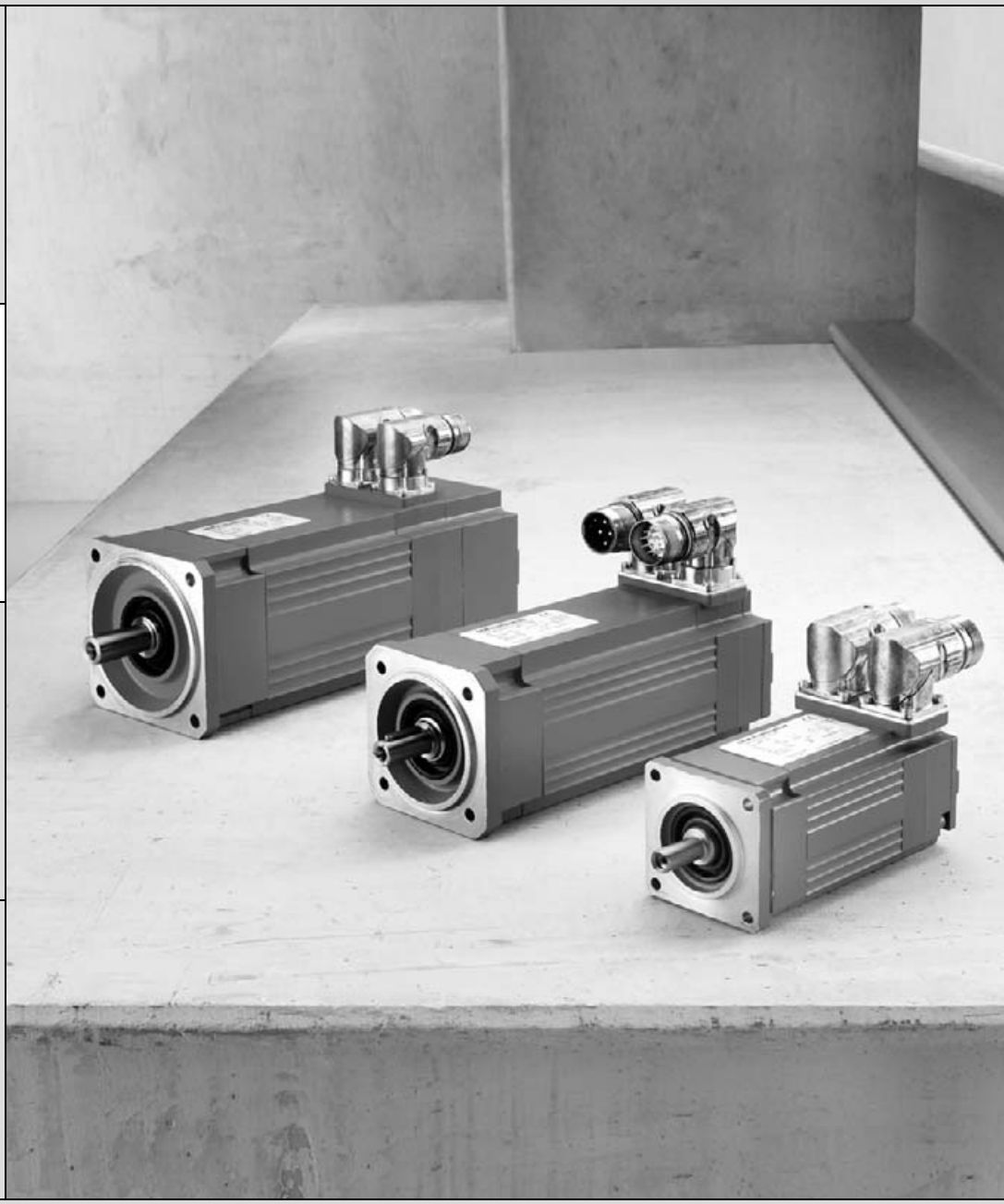
SEW EURODRIVE











CMP40/50/63
Synchronous Servomotors

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Edition 04/2006
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Operating Instructions

SEW
EURODRIVE

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1 Important Notes on the Operating Instructions

1.1 Important notes and designated use

1.1.1 Integral part of the product

The operating instructions are an integral part of the CMP synchronous servomotors and contain important information for operation and service. The operating instructions are written for assembly, installation, startup and service employees who are involved in the installation and maintenance of CMP synchronous servomotors.

1.1.2 Designated use

The designated use refers to the procedure specified in the operating instructions.

CMP synchronous servomotors are drive motors designed for use in industrial and commercial systems. Motor loads other than those specified and areas of application other than industrial and commercial systems should only be used after consultation with SEW-EURODRIVE.

The CMP synchronous servomotors meet the requirements of the low voltage directive 73/23/EEC. Do not take the unit into operation until you have established that the end product complies with the Machinery Directive 9837EG.

1.1.3 Qualified personnel

CMP synchronous servomotors represent a potential hazard for persons and equipment. Consequently, assembly, installation, startup and service work may only be performed by trained personnel who are aware of the potential hazards.

Employees must be appropriately qualified for the task in hand and must be familiar with the assembly, installation, startup and operation of the product. The personnel must read the operating instructions, in particular the safety notes section, carefully and ensure that they understand and comply with them.

1.1.4 Liability for defects

Incorrect handling or any action performed that is not specified in these operating instructions could impair the properties of the product. In this case, you lose any right to claim under limited warranty against SEW-EURODRIVE GmbH & Co KG.

1.1.5 Product names and trademarks

The brands and product names in these operating instructions are trademarks or registered trademarks of the titleholders.

1.2 Explanation of symbols

Always comply with the safety and warning instructions in this publication.

Electrical hazard
Possible consequences: Severe or fatal injuries.

Hazard
Possible consequences: Severe or fatal injuries.

Hazardous situation
Possible consequences: Slight or minor injuries.

Harmful situation
Possible consequences: Damage to the unit and the environment.

Tips and useful information.

2 Safety Notes

2.1 Preliminary information

The following safety notes are primarily concerned with the use of CMP synchronous servomotors.

Please also consider the supplementary safety notes in the individual sections of these operating instructions.

If using **gear units**, also refer to the safety notes for gear units in the corresponding operating instructions.

Danger of burns

Touching the CMP synchronous servomotor when it has not cooled down can result in burns. **The servomotor can have a surface temperature of more than 100 °C during operation.**

Never touch the CMP synchronous servomotor during operation or in the cool down phase once it has been switched off.

Disconnect all the power, brake and signal cables before removing the power and signal connector.

2.2 General information

Never install damaged products or take them into operation.

Submit a complaint to the shipping company immediately in the event of damage.

During and after operation, servomotors, gearmotors and gear units have:

- Live parts
- Moving parts
- Hot surfaces (may be the case)

Only qualified personnel may carry out the following work:

- Installation/assembly
- Connection
- Startup
- Maintenance
- Servicing

The following information and documents must be observed during these processes:

- Relevant operating instructions and wiring diagrams
- Warning and safety signs on the gear unit/gearmotor
- System-specific regulations and requirements
- National/regional regulations governing safety and the prevention of accidents

Serious injuries and property damage may result from:

- Improper use
- Incorrect installation or operation
- Unauthorized opening or removal of necessary protection covers or the housing

2.3 Shipping / putting into storage

Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. It may be that you are not permitted to startup the motor.

Use suitable, sufficiently rated handling equipment if necessary. Remove securing devices used for shipping prior to startup.

Possible damage caused by incorrect storage!

Store the servomotor in a dry, dust-free room if it is not to be installed straight away.

2.4 Installation / assembly

Comply with the instructions in section 4, "Mechanical Installation." and section 5, "Electrical Installation."

2.5 Startup / operation

Refer to the information in section 6, "Startup."

2.6 Inspection/maintenance

Comply with the instructions in section 8, "Inspection and Maintenance."

3 Delivery Scope and Unit Design

For information on the delivery scope and project planning, refer to the "Geared Servomotors Part 1 and Part2" catalogs as well as the relevant gear unit operating instructions.

3.1 Nameplate and unit designation

3.1.1 Nameplate on the servomotor

Example: Nameplate on the synchronous servo brake motor CMP50S / BP / KTY / RH1M / SB

SEW-EURODRIVE CE
76646 Bruchsal / Germany

Type	CMP50S/BP/KTY/RH1M /SB						
No.	02.1221234388.0001.06			3~	IEC34		
M_0	1.3	Nm	I_0	1.7	A	IP	65
n_N	6,000	r/min	I_{max}	9.0	A	Iso.cl.	F
f_N	300	Hz	U_{max}	400	V	IM	M4
Brake	24 V		3,1 Nm	Rectifier			
Gear unit	M_{amax}		Nm	n_{max}	/	r/min	
i	:1			Weight	2.9	kg	

Lubricant:
1332 749 6 Permanent magnet Made in Germany

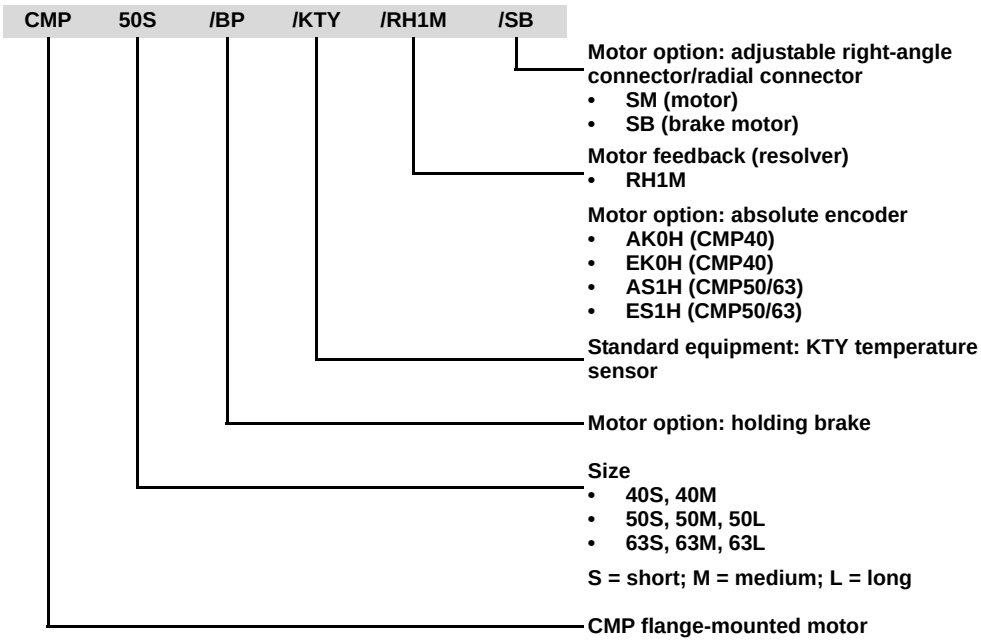
54343AEN

Figure 1: Nameplate on the CMP synchronous servo brake motor

58810axx

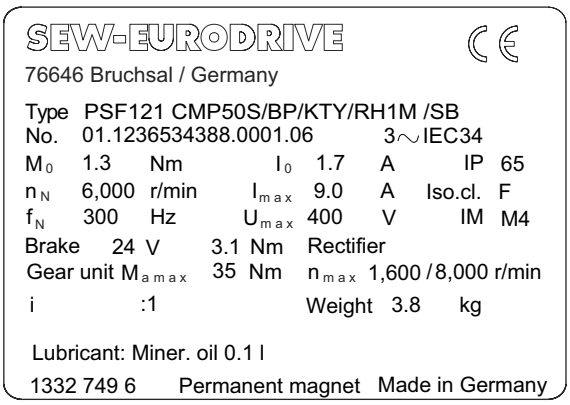
Figure 2: Location of the nameplate

3.1.2 Unit designation of the servomotor



3.1.3 Nameplate on the geared servomotor

Example: Nameplate on the synchronous geared servomotor PSF121 CMP50S / BP / KTY / RH1M / SB

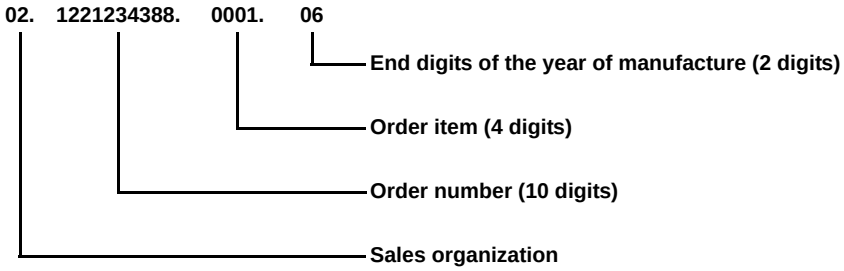

SEW-EURODRIVE
76646 Bruchsal / Germany
Type PSF121 CMP50S/BP/KTY/RH1M /SB
No. 01.1236534388.0001.06 3~ IEC34
M0 1.3 Nm I0 1.7 A IP 65
nN 6,000 r/min Imax 9.0 A Iso.cl. F
fN 300 Hz Umax 400 V IM M4
Brake 24 V 3.1 Nm Rectifier
Gear unit Mamax 35 Nm nmax 1,600 / 8,000 r/min
i :1 Weight 3.8 kg
Lubricant: Miner. oil 0.1 l
1332 749 6 Permanent magnet Made in Germany

59160AEN

Figure 3: Nameplate on the CMP synchronous geared servomotor with PSF gear unit

For information on the assignment of the BSF../PSF.. low-backlash gear servomotors to CMP servomotors, see section 2.5 in the catalog.

3.1.4 Serial number


02. 1221234388. 0001. 06
End digits of the year of manufacture (2 digits)
Order item (4 digits)
Order number (10 digits)
Sales organization

3.2 Design of the CMP synchronous servomotor

The following illustration is intended to explain the general structure of the unit. Differences are possible depending on the motor size and version.

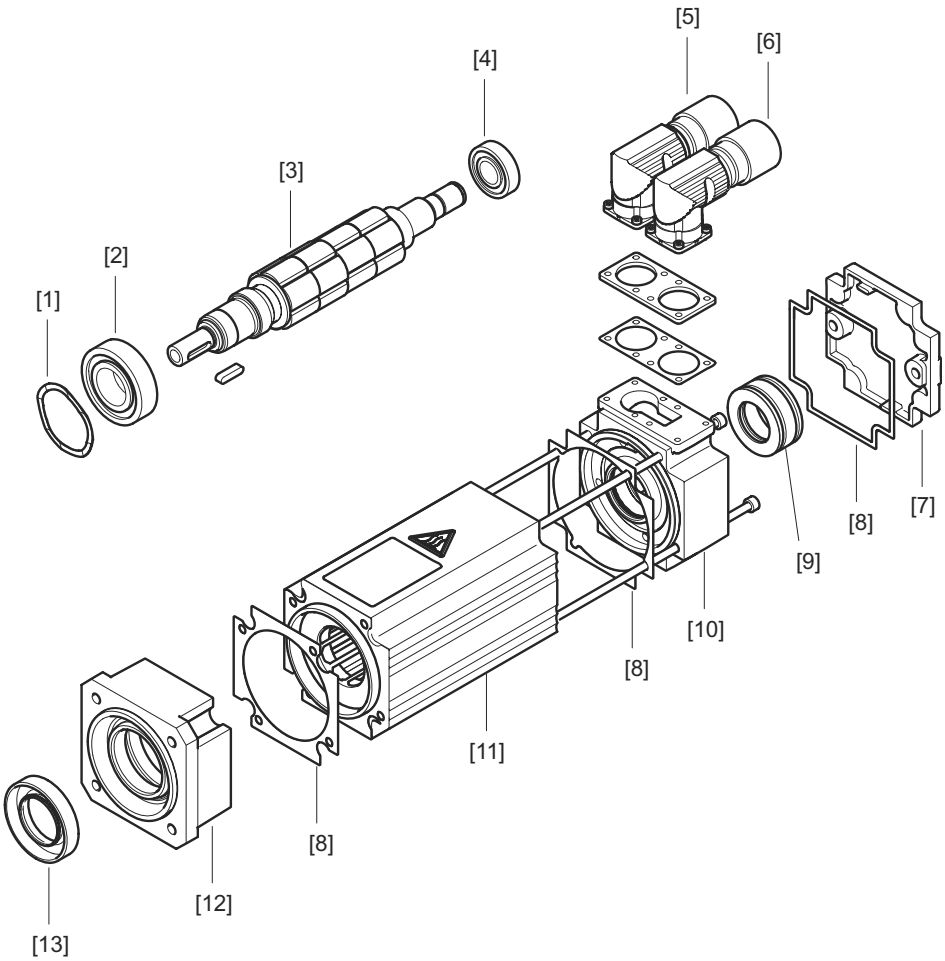


Figure 4: Basic design of the CMP synchronous servomotor

[1] Equalizing ring
[2] Grooved ball bearing
[3] Rotor
[4] Grooved ball bearing
[5] SM/SB signal plug connector
[6] SM/SB power plug connector
[7] Housing cover
[8] Flat gasket
[9] Resolver
[10] Non drive-end bearing shield
[11] Stator
[12] Flanged end shield
[13] Oil seal

4 Mechanical Installation

It is essential to comply with the safety notes in section 2 during installation.

4.1 Required tools / resources

- Standard tools
- Crimping tool for plug connectors in case customers want to perform prefabrication themselves
- Removal tool for insulator when changing the connector

4.2 Before you start

- The entries on the nameplate of the drive or the output voltage of the servo inverter must match the voltage supply system.
- The drive must be undamaged (no damage caused by shipping or storage).
- Ambient temperature must be between –20 °C and +40 °C.
- No oil, acid, gas, vapors, radiation, etc.
- The installation altitude must be no higher than 1000 m above sea level, otherwise the drive must be designed to meet the special environmental conditions.

4.3 Preliminary work

Motor shaft ends must be thoroughly cleaned of anti-corrosion agents, contamination or similar. Use a commercially available solvent. Make sure that the solvent does not come into contact with the bearing or sealing rings as it may damage the material.

4.3.1 Long-term storage of servomotors

- The service life of the ball bearing grease is reduced after storage periods exceeding one year.
- Check whether the servomotor has absorbed moisture as a result of being stored for a long time. Measure the insulation resistance with a measurement voltage of DC 500 V.

The insulation resistance varies greatly depending on the temperature, see Figure 5. You can measure the insulation resistance between the connection pins and the motor housing using an insulation measuring device.

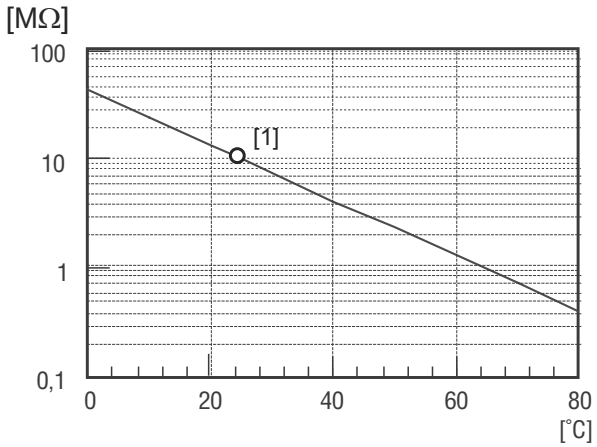


Figure 5: Insulation resistance depending on the temperature

[1] Resistance/temperature point (RT point)

4.3.2 Insulation resistance too low

Insulation resistance too low:

→ Servomotor has absorbed moisture.

Measure: Send the servomotor to SEW-EURODRIVE Service with a description of the error.

4.4 Installing the servomotor

The servomotor or gearmotor may only be mounted or installed in the specified mounting position on a level and torsionally rigid support structure that is not subjected to shocks.

Danger of burns

Touching the CMP synchronous servomotor when it has not cooled down can result in burns. The servomotor can have a surface temperature of more than 100 °C.

Never touch the CMP synchronous servomotor during operation or in the cool down phase once it has been switched off.

Aligning the motor shaft

Align the servomotor and the driven machine carefully to avoid placing any unacceptable strain on the output shaft. Observe the permitted overhung and axial loads, see the "CMP Synchronous Servomotors" catalog.

Do not jolt or hammer the shaft end.

The forced cooling fan can be damaged if it is installed incorrectly.

Use an appropriate cover to protect motors with VR forced cooling fan in vertical mounting positions from objects or fluids.

Supply of cooling air

If a forced cooling fan is used, ensure there is sufficient clearance around the unit to allow for adequate cooling. Make sure that it does not reuse the air warmed by other devices. Position the unit housing **at least 10 cm** away from the wall.

Components with a keyway to be mounted belatedly on the shaft must be balanced using a half key. Motor shafts with a keyway are balanced with a half key.

Installation in damp locations or in the open

- Try to arrange the motor and encoder connection so that the connector cables do not point upwards.
- Clean the sealing surfaces of the connector (motor or encoder connection) before reassembly.
- Replace any brittle seals.
- If necessary, restore the anticorrosive paint coat.
- Check that the degree of protection is maintained.
- If necessary, attach covers (protection canopy).

4.5 Installation tolerances

Shaft end	Flange
Diameter tolerance in accordance with DIN 748 • ISO k6 • Center bore to DIN 332	Centering shoulder tolerance to DIN 42948 • ISO j6

5 Electrical Installation

It is essential to comply with the safety notes in section 2 during installation.

Use switch contacts in utilization category AC-3 to EN 60947-4-1 to connect the servomotor and brake.

The wiring diagram is supplied in a bag attached to the motor.

Observe the wiring instructions supplied by the manufacturer of the servo inverter for servomotors operated with servo inverters. It is essential to observe the operating instructions supplied with the servo inverter.

A bag containing the following information is attached to the motor:
- Safety notes
- Wiring diagram

You must comply with this information.

5.1 Connector installation

The cable entry of the power and signal cable is installed using an adjustable right-angle connector. Once the mating connector has been plugged in, the right-angle connector can be adjusted as required without using additional tools. A torque of approximately 10 Nm is required to adjust the connector.

The connector can be damaged if it is installed incorrectly.

If the connector is tightened when it is installed in the wrong position, the insulator could slip causing irreparable damage.

Note the following points when plugging in the power and signal connector:

- Check that the connector is installed in the correct position.
- Check that the detent on the connector is positioned correctly.
- Make sure that the connector lock can be turned without having to apply too much force.

Connector positions

Position "A" has been defined for right-angle, rotatable connectors. This is the standard connector position.

Position "4" has been defined for the straight connector housing (radial output). Radial connectors are optional.

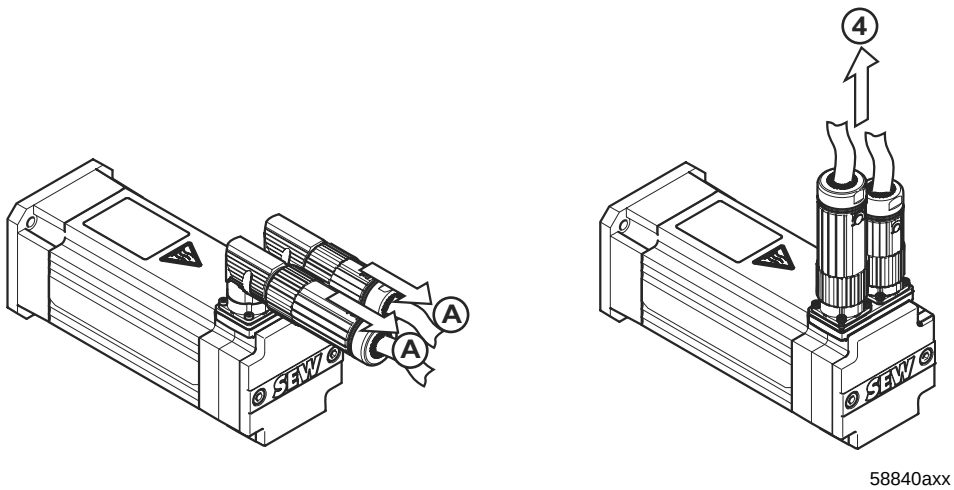


Figure 6: Connector positions

Comply with the permitted bending radii of the cables.

The CMP motors are supplied with right-angle connectors in position "A" as standard.

The right-angle connectors can be rotated to achieve the required position.

The connector should only be rotated to install and connect the motor. Do not turn the connector regularly once it has been installed.

Positions of the adjustable connector

Figure 7: Positions of the adjustable connector

[1] Delivery status = standard connector position "A"

5.2 Wiring notes

5.2.1 Protecting the brake control system against interference

To protect the brake control system against interference, do not route unshielded brake cables together with switched-mode power cables.

Switched-mode power cables include in particular:

- Output cables from servo inverters, converters, soft start units and brake units
- Supply cables to braking resistors and similar.

5.2.2 Thermal motor protection

Install the connecting lead of the KTY separately from other power cables, maintaining a distance of at least 200 mm. The cables can only be routed together if either the KTY cable or the power cable is shielded.

5.3 Connecting the motor and encoder system via an SM/SB plug connector

The CMP synchronous servomotors are supplied with an SM/SB plug connector system. In the basic version, SEW-EURODRIVE delivers CMP synchronous servomotors with a flange socket on the motor end and without mating connector. The encoder system is connected using a 12-pin round plug connector.

The mating connectors can be ordered separately.

Adjusting the right-angle connector regularly can cause irreparable damage.

Do not align the right-angle connector frequently.

5.3.1 Plug connector on the cable end

Power cable

Plug connector system	Cable type	Type [1]	Cable cross section	Part number
SM11	Motor cable	Fixed	4 x 1.5 mm^2	0590 4544
SM12			4 x 2.5 mm^2	0590 4552
SM14			4 x 4 mm^2	0590 4560
SM11	Motor cable	Flex	4 x 1.5 mm^2	0590 6245
SM12			4 x 2.5 mm^2	0590 6253
SM14			4 x 4 mm^2	0590 4803
SB11	Brake motor cable[2]	Fixed	4 x 1.5 mm^2 + 2 x 1 mm^2	1332 4853
SB12			4 x 2.5 mm^2 + 2 x 1 mm^2	1333 2139
SB14			4 x 4 mm^2 + 2 x 1 mm^2	1333 2147
SB11	Brake motor cable[2]	Flex	4 x 1.5 mm^2 + 2 x 1 mm^2	1333 1221
SB12			4 x 2.5 mm^2 + 2 x 1 mm^2	1333 2155
SB14			4 x 4 mm^2 + 2 x 1 mm^2	1333 2163

1) Fixed: fixed routing; flex: cable carrier installation

2) 3-core cable, only 2 cores are used

5.3.2 Feedback and forced cooling fan cable

Feedback cable

Cable type	Type [1]	FI type	Part number
Resolver cable	Fixed	MOVIDRIVE®	0199 4875
	Flex	MOVIDRIVE®	0199 3194
	Fixed	MOVIAXIS®	1332 7429
	Flex	MOVIAXIS®	1332 7437
Hiperface cable	Fixed	MOVIDRIVE®/MOVIAXIS®	1332 4535
	Flex	MOVIDRIVE®/MOVIAXIS®	1332 4551

1) Fixed: fixed routing; flex: cable carrier installation

Forced cooling fan cable

Cable type	Type [1]	Cable cross section	Part number
Forced cooling fan cable	Fixed	3 x 1 mm^2	0198 6341
	Flex	3 x 1 mm^2	0199 560X

1) Fixed: fixed routing; flex: cable carrier installation

For information on the extension cables for power, feedback and forced cooling fan cables, refer to the CM/DS servo catalogs.

5.3.3 Mating connector combinations

Cable type		Cable cross section	Part number of the combination
Resolver cable	Motor cable	4 x 1.5 mm^2	0198 6740
		4 x 2.5 mm^2	0198 6740
		4 x 4 mm^2	0199 1639
	Brake motor cable[1]	4 x 1.5 mm^2 + 2 x 1 mm^2	0198 6740
		4 x 2.5 mm^2 + 2 x 1 mm^2	0198 6740
		4 x 4 mm^2 + 2 x 1 mm^2	0199 1639
Hiperface cable	Motor cable	4 x 1.5 mm^2	0198 6740
		4 x 2.5 mm^2	0198 6740
		4 x 4 mm^2	0199 1639
	Brake motor cable[1]	4 x 1.5 mm^2 + 2 x 1 mm^2	0198 6740
		4 x 2.5 mm^2 + 2 x 1 mm^2	0198 6740
		4 x 4 mm^2 + 2 x 1 mm^2	0199 1639

1) 3-core cable, only 2 cores are used

The complete set of the mating connector combination includes the following parts:

- Feedback/power connector
- Insulation inserts
- Contact pins
- Other accessories

5.3.4 Prefabricated cables

Prefabricated cables are available from SEW-EURODRIVE to connect the SM../SB.. plug connector system. For information on prefabricated cables, refer to the "Synchronous Servomotors CMP40/50/63" catalog.

For information on the mating connectors with matching crimp contacts 1.5 mm^2, 2.5 mm^2 and 4 mm^2, refer to the "Synchronous Servomotors CMP40/50/63" catalog.

The plug connectors are depicted with the connector assignment on the cable at the connection side (back).

Note the following points if you want to assemble the cables yourself:

- Section 5.4 describes the assembly of the SM/SB power plug connectors and the signal plug connectors.
- The socket contacts for the motor connection are designed as crimp contacts. Only use suitable tools for crimping.
- Strip the leads as described in section 5.4. Apply shrink tubing to the connectors.
- Only use suitable removal tools to remove socket contacts that have been installed incorrectly.

5.3.5 Wiring diagrams for CMP synchronous servomotors

The following applies to all wiring diagrams:

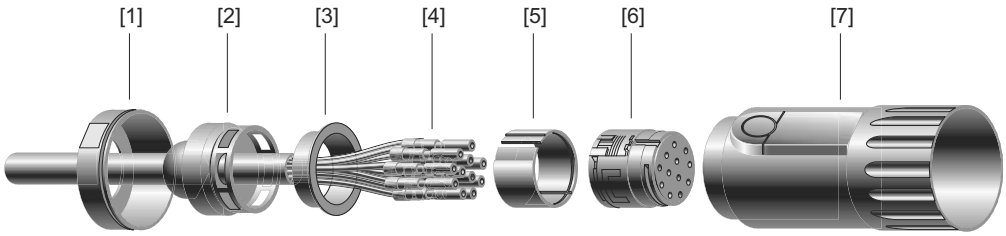
- View to the wiring side
- Cables comply with the color code of SEW-EURODRIVE:

Color code	Color
BK	Black
BN	Brown
BU	Blue
GN	Green
GY	Gray
OG	Orange
PK	Pink
RD	Red
VT	Violet
WH	White
YE	Yellow
GY/PK	Gray/pink
RD/BU	Red/blue
BK/WH	Black/white
RD/WH	Red/white

5.4 Assembling resolver/HIPERFACE® plug connectors

5.4.1 Scope of delivery for plug connectors

The following parts are supplied for assembling resolver/HIPERFACE® plug connectors. The SEW part number is 198 673 2.

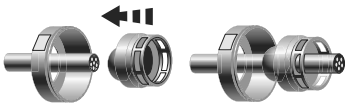
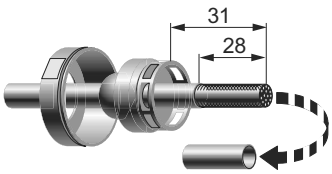
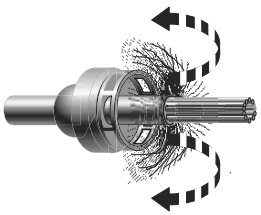
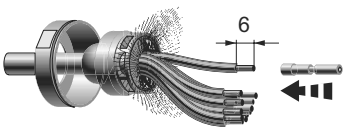
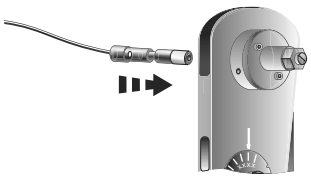
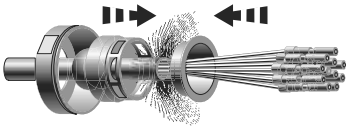


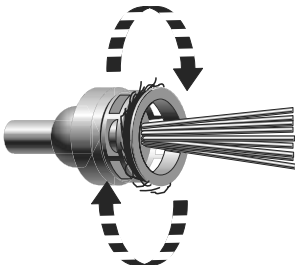
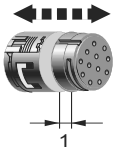
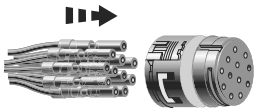
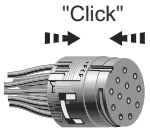
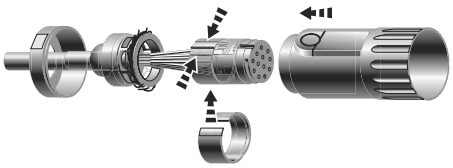
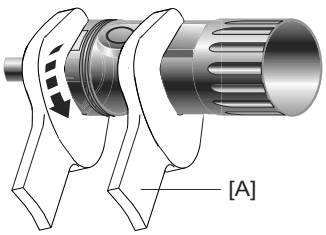
54715AXX

[1] Screw fitting
[2] Seal with strain relief
[3] Shield ring
[4] Socket contacts
[5] Insulating sleeve
[6] Insulator
[7] Connector housing

Hold the cable firmly in place when tightening the cable and the connector.

5.4.2 Assembly instructions for plug connectors

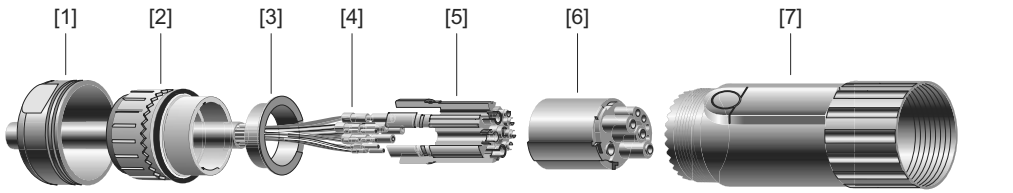
1		• Pull the screw fitting and seal with strain relief 31 mm over the cable.
2		• Strip 28 mm of cable insulation off the end of the cable
3		• Fold back the braid shield and fan it out
4		• Strip 6 mm insulation off the leads • Push the socket contacts onto the ends of the leads
5		• Insert the small-diameter positioning tool (SEW part number 019 244 9) into the crimping tool until the green mark appears in the view window [A]. • Set the press thickness [B] to 24 on the crimping tool.
6		• Insert a lead with socket contact in the crimping tool and press the tool fully together. The tool then opens automatically. • Repeat this procedure for each lead.
7		• Pull the shield over the leads and press it against the seal.

8		• Turn the shield ring until the braid shield is flush with the shield ring.
9		• Pull the insulator apart evenly by about 1 mm.
10		• Insert the socket contacts into the insulator.
11		• Press the insulator together until you hear a "click."
12		• Fold open the insulating sleeve. • Position the side of the insulating sleeve with the recess against the groove in the insulator so that the opening of the insulating sleeve is pointing in the same direction as the double-headed arrow on the insulator. • Press the insulating sleeve together until it engages. • Insert the insulator into the connector housing in the middle position.
13		• Fix the connector housing with a wrench and use a second wrench to tighten the screw fitting. • [A] = Fix in place

5.5 Assembling the power connector

5.5.1 Scope of delivery for the power connector

The following parts are supplied for assembling the power connectors. The SEW part number is 198 674 0.



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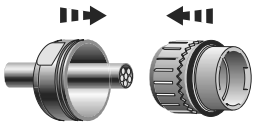
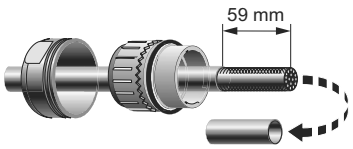
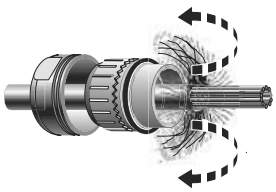
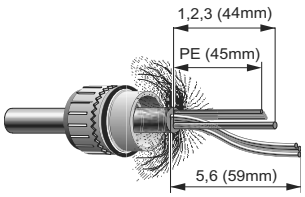
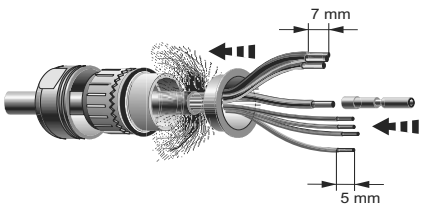
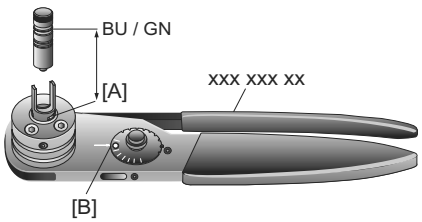
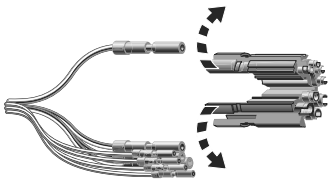
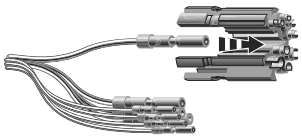
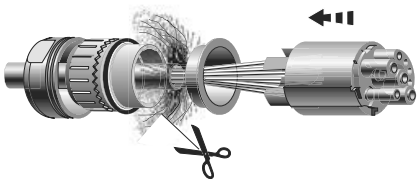
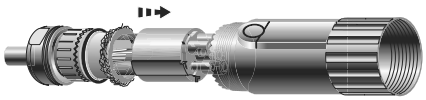
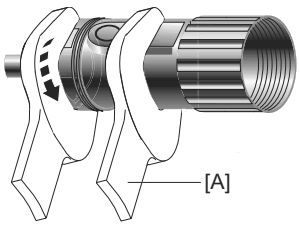
[1] Screw fitting
[2] Seal with strain relief
[3] Shield ring
[4] Socket contacts
[5] Insulating sleeve
[6] Insulator
[7] Connector housing

Hold the cable firmly in place when tightening the cable and the connector.

5.5.2 Assembly instructions for the power connector

<table>
<tr><td>1</td><td>  </td><td>• Pull the screw fitting and the seal with strain relief over the cable.</td></tr>
<tr><td>2</td><td> 
</td><td>• Strip 59 mm of cable insulation off the end of the cable.</td></tr>
<tr><td>3</td><td>  </td><td>• Fold back the braid shield and fan it out.</td></tr>
<tr><td>4</td><td> 
</td><td>• Shorten the power leads (1, 2 and 3) to 44 mm.
• Shorten the PE lead (GN/YE) to 45 mm.
• Do not short lead pair 5 and 6.
• Cut off lead pair 7 and 8 flush with the end of the cable.</td></tr>
<tr><td>5</td><td> 
</td><td>• Pull the shield over the leads.
• Strip 7 mm of insulation off leads 1, 2, 3 and PE.
• Strip 5 mm of insulation of leads 5 and 6.</td></tr>
<tr><td>6</td><td> 
</td><td>• Insert the positioning tool in the crimping tool until the marking (color) appears in the view window [A] appears (see table below).
• Set the press thickness [B] on the crimping tool according to the table.
<table>
<tr><th>Lead</th><th>a [mm^2]</th><th>Positioning tool Part number xxx xxx x</th><th>Marking (color)</th><th>Press thickness</th></tr>
<tr><td>5 and 6</td><td>0.14 ... 1.0</td><td>019 244 9</td><td>Green (GN)</td><td>24</td></tr>
<tr><td>1, 2, 3 and PE</td><td>0.35 ... 4.0</td><td>019 245 7</td><td>Blue (BU)</td><td>6</td></tr>
</table></td></tr>
<tr><td>7</td><td> </td><td>• Insert a lead with socket contact in the crimping tool and press the tool fully together. The tool then opens automatically.
• Repeat this procedure for each lead in accordance with the table in step 6.</td></tr>
</table>

8		• Open the insulating sleeve.
9		• Insert the middle socket contact into the insulator as shown in the wiring diagram in section 5.3. • Close the insulating sleeve until it clicks shut. • Insert the remaining socket contacts into the insulator as shown in the wiring diagram in section 5.3.
10		• Shorten the braid shield as shown. • Insert the shield ring into the seal so that the shield and end of the cable are flush. Make sure that the braid shield is routed cleanly between the shield ring and the seal.
11		• Insert the insulator into the connector housing until the seal rests against its stop in the connector housing.
12		• Fix the connector housing with a wrench and use a second wrench to tighten the screw fitting. • [A] = Fix in place

5.6 Thermal motor protection

Due to the low thermal time constants of the winding, thermal motor protection is only possible when, in addition to a temperature sensor, a current monitoring device (I^2t, effective current monitoring) or a motor model for thermal protection, as installed in SEW servo inverters, is activated.

KTY temperature sensor

Incorrect connection may cause damage to the temperature sensor and the motor winding.

Avoid currents > 4 mA in the circuit of the KTY since high self-heating of the temperature sensor can damage its insulation and the motor winding.

It is essential to observe the correct connection of the KTY to ensure correct evaluation of the temperature sensor.

The characteristic curve in the following figure shows the resistance curve with a measuring current of 2 mA and correct pole connection.

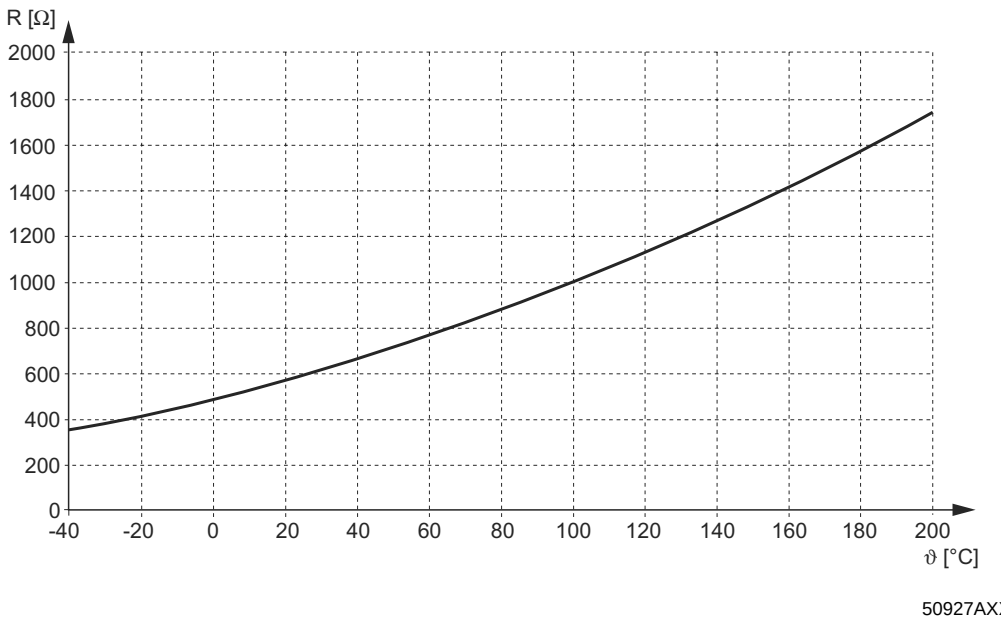


Figure 8: Resistance of the KTY sensor depending on the motor temperature

For detailed information on connecting the KTY, refer to the contact assignments of the resolver/encoder cable. Observe the correct polarity.

5.7 VR forced cooling fan

The synchronous servomotors size CMP50 and CMP63 can be equipped with a VR forced cooling fan as an option.

Mechanical installation

The fan guard is attached using self-tapping screws M5 x 8 with screw adhesive (low strength). The tightening torque of the screws is 7 Nm.

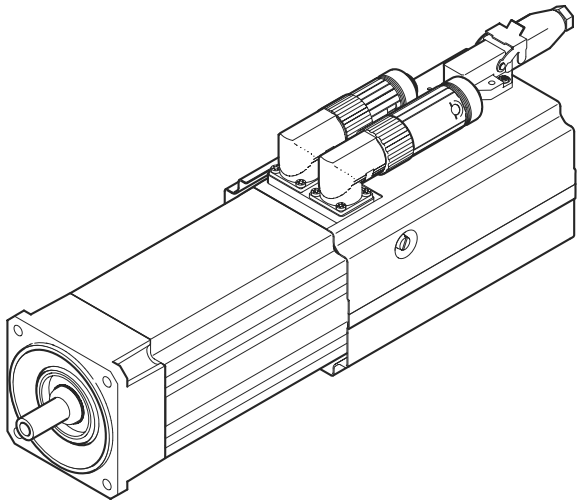


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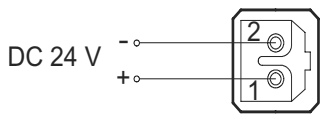
Figure 9: CMP63 synchronous servomotor with forced cooling fan

Electrical connection

The VR forced cooling fan is only available for 24 V DC voltage.

- DC 24 V ± 20 %
- Plug connector connection
- Maximum connection cross section 2 x 1 mm^2
- Cable gland Pg7 with inside diameter 7 mm



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Connector contact	Connection
1	24 V +
2	0 V

Retrofit set for CMP50/63

Only authorized personnel from SEW-EURODRIVE are permitted to install the retrofit set for the forced cooling fan for CMP50/63 motors.

For information on the retrofit set, refer to the "CMP40/50/63 Synchronous Servomotors" catalog.

6 Startup

6.1 Prerequisites for startup

You must comply with the safety notes in section 2.

The rated speed of the motor in a gearmotor can be higher than the permitted, input speed of the gear unit. Set the maximum speed on the servo inverter. For information on the procedure, refer to the documentation of the servo inverter.

To avoid the low start-up losses during motor operation at low temperatures, SEW-EURODRIVE recommends warming up the motor winding using a current supply. Please contact SEW-EURODRIVE for more information.

Before startup

- The drive must be undamaged and not blocked.
- The measures stipulated in section 4.3 "Preliminary work" must be performed after extended storage.
- All connections have to be made correctly.
- The direction of rotation of the servomotor/gearmotor must match.
- All protective covers have to be fitted correctly.
- All motor protection devices have to be active.
- There must be no other sources of danger present.
- No heat-sensitive or insulating materials are allowed to cover the motor surface.

During startup

- The servomotor must run correctly (no overload, no unwanted speed fluctuations, no loud noises, etc.).
- In case of problems, refer initially to section 7, "Faults."

7 Faults

7.1 Servomotor faults

Fault	Possible cause	Remedy
Servomotor does not start	Interruption in supply cable	Check connections, correct if necessary
	Fuse has blown	Replace fuse
	Motor protection has triggered	Check motor protection for correct setting, correct error if necessary.
Incorrect direction of rotation	Servomotor connected incorrectly	Check servo inverter, check setpoints
Servomotor hums and has high current consumption	Drive is blocked	Check drive
	Brake does not release	See section 7.3, "Brake faults"
	Fault on encoder cable	Check encoder cable
Servomotor heats up excessively (measure temperature, significantly higher than 110 °C)	Overload	Measure power, use larger servomotor or reduce load if necessary, check travel profile
	Ambient temperature is too high	Comply with permitted temperature range
	Forced cooling fan does not run	Check connection, correct if necessary
	Rated operating mode (S1 to S10, EN 60034) exceeded, e.g. caused by excessive torque	Adjust rated operating mode of servomotor to required operating conditions; if necessary call in a specialist to determine the correct drive
Running noise on servomotor	Bearing damage	• Contact SEW-EURODRIVE customer service • Replace the servomotor

7.2 Faults during operation with a servo inverter

The symptoms described in section 7.1 may also occur when the servomotor is operated with a servo inverter. Please refer to the servo inverter operating instructions for the meaning of the problems that occur and to find information about rectifying the problems.

Please have the following information to hand if you require the assistance of our customer service:

- Nameplate data
- Type and extent of the problem
- Time the problem occurred and any accompanying circumstances
- Assumed cause

8 Inspection/Maintenance

Danger of burns

Touching the CMP synchronous servomotor when it has not cooled down can result in burns. **The servomotor can have a surface temperature of more than 100 °C.**

To prevent burns:

- Never touch the CMP servomotor during operation or in the cool down phase once it has been switched off.
- Wear protective gloves.

- Do not perform any maintenance while the machine is running.
- Isolate the servomotor and brake from the power supply before starting work, safeguarding them against unintentional power-up.

- Use only genuine spare parts in accordance with the valid parts list.
- The motor must be disassembled when replacing the brake which cannot be adjusted. Only service engineers from SEW-EURODRIVE can perform maintenance on the BP brake because the encoder or resolver has to be reset each time the system is disassembled.

8.1 Inspection intervals

The amount of wear is affected by many factors and the service life may be short. The machine designer must calculate the required inspection intervals individually in accordance with the project planning documents (e.g. Drive Engineering - Practical Implementation 'Drive Project Planning,' the Geared Servomotors catalog).

Take the manufacturer's data into account in the maintenance schedule.

Cleaning

Excessive dirt, dust or shavings can have a negative impact on the function of servomotors; in extreme cases these factors can cause the servomotor to break down.

Therefore, you must clean the servomotors at regular intervals (after one year at the latest) to ensure a sufficiently large area for heat emission.

Insufficient heat emission can have unwanted consequences. The bearing service life is reduced through operation at impermissibly high temperatures (bearing grease degrades).

Connection cable

Check the connection cable for damage at regular intervals and replace if necessary.

Danger of fatal electric shock from live parts.

Do not perform temporary repairs on the connection cables. When the cable jacket is defective, no matter how small the fault, shut down the system immediately and replace the cable.

9 Technical Data

9.1 Motor data of the CMP servomotors

n_N	Motor	M_0	I_0	M_{max}	I_{max}:	M_{0VR}	I_{0VR}	J_{mot}	J_{bmot}	M_{B1}	M_{B2}	L_1	R_1	U_{p0} cold
[min^{-1}]		[Nm]	[A]	[Nm]	[A]	[Nm]	[A]	[kgcm^2]		[Nm]		[mH]	Ω	[V]
3000	CMP40S	0.5	1.2	1.9	6.1	-	-	0.1	0.13	0.95	--	23	11.94	27.5
	CMP40M	0.8	0.95	3.8	6.0	-	-	0.15	0.18	0.95	--	45.5	19.92	56
	CMP50S	1.3	0.96	5.2	5.1	1.7	1.25	0.42	0.48	3.1	4.3	71	22.49	86
	CMP50M	2.4	1.68	10.3	9.6	3.5	2.45	0.67	0.73	4.3	3.1	38.5	9.98	90
	CMP50L	3.3	2.2	15.4	13.6	4.8	3.2	0.92	0.99	4.3	3.1	30.5	7.41	98
	CMP63S	2.9	2.15	11.1	12.9	4	3	1.15	1.49	7	9.3	36.5	6.79	90
	CMP63M	5.3	3.6	21.4	21.6	7.5	5.1	1.92	2.26	9.3	7	22	3.57	100
	CMP63L	7.1	4.95	30.4	29.7	10.3	7.2	2.69	3.03	9.3	7	14.2	2.07	100
4500	CMP40S	0.5	1.2	1.9	6.1	-	-	0.1	0.13	0.85	--	23	11.94	27.5
	CMP40M	0.8	0.95	3.8	6.0	-	-	0.15	0.18	0.95	--	45.5	19.92	56
	CMP50S	1.3	1.32	5.2	7.0	1.7	1.7	0.42	0.48	3.1	4.3	37	11.6	62
	CMP50M	2.4	2.3	10.3	13.1	3.5	3.35	0.67	0.73	4.3	3.1	20.5	5.29	66
	CMP50L	3.3	3.15	15.4	19.5	4.8	4.6	0.92	0.99	4.3	3.1	14.6	3.56	68
	CMP63S	2.9	3.05	11.1	18.3	4	4.2	1.15	1.49	7	9.3	18.3	3.34	64
	CMP63M	5.3	5.4	21.4	32.4	7.5	7.6	1.92	2.26	9.3	7	9.8	1.49	67
	CMP63L	7.1	6.9	30.4	41.4	10.3	10	2.69	3.03	9.3	7	7.2	1.07	71
6000	CMP40S	0.5	1.2	1.9	6.1	-	-	0.1	0.13	0.95	--	23	11.94	27.5
	CMP40M	0.8	1.1	3.8	6.9	-	-	0.15	0.18	0.95	--	34	14.95	48.5
	CMP50S	1.3	1.7	5.2	9.0	1.7	2.2	0.42	0.48	3.1	4.3	22.5	7.11	48.5
	CMP50M	2.4	3	10.3	17.1	3.5	4.4	0.67	0.73	4.3	3.1	12	3.21	50.5
	CMP50L	3.3	4.2	15.4	26	4.8	6.1	0.92	0.99	4.3	3.1	8.2	1.91	51
	CMP63S	2.9	3.9	11.1	23.4	4	5.4	1.15	1.49	--	--	11.2	2.1	50
	CMP63M	5.3	6.9	21.4	41.4	7.5	9.8	1.92	2.26	--	--	5.9	0.92	52
	CMP63L	7.1	9.3	30.4	55.8	10.3	13.5	2.69	3.03	--	--	4	0.62	53

n_N	Rated speed
M_0	Torque at zero speed (thermal continuous torque at low speeds)
I_0	Standstill current
M_{max}	Maximum limit torque of the servomotors
I_{max}:	Maximum permitted motor current
M_{0VR}	Torque at zero speed with forced cooling fan
I_{0VR}	Standstill current with forced cooling fan
J_{mot}	Mass moment of inertia of the motor
J_{bmot}	Mass moment of inertia of the brake motor
M_{B1}	Standard braking torque
M_{B2}	Reduced braking torque
L_1	Inductance of the winding
R_1	Ohmic resistance of the winding
U_{p0} cold	Internal voltage at 1000 min^{-1}

9.2 Inverter assignment to MOVIDRIVE® MDX60B/61B

Overview of combinations for CMP servomotors, system voltage 400 V, **peak torque M_{max} in Nm**.

n_N [min^{-1}]	Motor	I_{max} :	MOVIDRIVE® B												
			005	008	011	014	0015	022	030	040	055	075	110	150	220
			4.0 [A]	4.8 [A]	6.2 [A]	8.0 [A]	6.0 [A]	8.25 [A]	10.5 [A]	14.3 [A]	18.8 [A]	24.0 [A]	36.0 [A]	48.0 [A]	69.0 [A]
3000	CMP40S		1.5	1.7	1.9		1.9	1.9							
	CMP40M		3	3.3	3.8		3.8								
	CMP50S		4.5	5	5.2		5.2								
	CMP50M		5.4	6.3	7.7	9.3	7.6	9.4	10.3						
	CMP50L		5.9	6.9	8.7	10.7	8.4	11	13.1	15.4					
	CMP63S		5.2	6	7.3	8.7	7.1	8.8	10.1	11.1					
	CMP63M		6	7.1	8.9	11.1	8.7	11.3	13.7	17.0	20	21.4			
	CMP63L				9	11.3	8.7	11.6	14.4	18.6	23	27	30.4		
4500	CMP40S		1.5	1.7	1.9		1.9	1.9							
	CMP40M		3	3.3	3.8		3.8								
	CMP50S		3.5	4.1	4.8	5.2	4.7	5.2							
	CMP50M		4.1	4.8	6	7.4	5.9	7.6	9	10.3					
	CMP50L		4.2	5	6.3	7.9	6.1	8.2	10	12.7	15.1	15.4			
	CMP63S		3.8	4.5	5.6	6.8	5.4	7	8.2	9.9	11.1				
	CMP63M				6.2	7.8	6	8	9.9	12.7	15.6	18.3	21.4		
	CMP63L					8.3	6.4	8.6	10.7	14.1	17.8	21.6	28.2	30.4	
6000	CMP40S		1.5	1.7	1.9		1.9	1.9							
	CMP40M		2.6	3	3.6	3.8	3.5	3.8							
	CMP50S		2.9	3.3	4.1	4.8	4	4.9	5.2						
	CMP50M			3.8	4.8	6	4.6	6.1	7.4	9.2	10.3				
	CMP50L			3.8	4.8	6.1	4.7	6.3	7.8	10.2	12.5	14.7	15.4		
	CMP63S			3.6	4.5	5.6	4.4	5.8	6.9	8.6	10	11.1			
	CMP63M					6.3	4.8	6.5	8	10.4	13.0	15.6	20	21.4	
	CMP63L							6.5	8.1	10.8	13.8	17	23.3	28.1	30.4

9.3 Inverter assignment to MOVIAXIS® MX

Overview of combinations for CMP servomotors, system voltage 400 V, peak torque M_{max} in Nm.

n_N [min^{-1}]	Motor	I_N [A] / I_{max} [A]	MOVIAXIS® MX						
			Size 1			BG2		BG3	
			2	4	8	12	16	24	32
			5	10	20	30	40	60	80
3000	CMP40S	I_{max} [%xI_N]	250	153					
		M_{max} [Nm]	1.7	1.9					
	CMP40M	I_{max} [%xI_N]	250	150					
		M_{max} [Nm]	3.4	3.8					
	CMP50S	I_{max} [%xI_N]	250	128					
		M_{max} [Nm]	5.1	5.2					
	CMP50M	I_{max} [%xI_N]	250	240					
		M_{max} [Nm]	6.5	10.3					
	CMP50L	I_{max} [%xI_N]	250	250	170				
		M_{max} [Nm]	7.2	12.7	15.4				
	CMP63S	I_{max} [%xI_N]	250	250	161				
		M_{max} [Nm]	6.2	9.9	11.1				
	CMP63M	I_{max} [%xI_N]		250	250	180			
		M_{max} [Nm]		13.2	20.6	21.4			
	CMP63L	I_{max} [%xI_N]		250	250	248			
		M_{max} [Nm]		13.8	24	30.8			
4500	CMP40S	I_{max} [%xI_N]	250	153					
		M_{max} [Nm]	1.7	1.9					
	CMP40M	I_{max} [%xI_N]	250	150					
		M_{max} [Nm]	3.4	3.8					
	CMP50S	I_{max} [%xI_N]	250	175					
		M_{max} [Nm]	4.2	5.2					
	CMP50M	I_{max} [%xI_N]	250	250	164				
		M_{max} [Nm]	5	8.7	10.3				
	CMP50L	I_{max} [%xI_N]		250	244				
		M_{max} [Nm]		9.6	15.4				
	CMP63S	I_{max} [%xI_N]		250	229				
		M_{max} [Nm]		8	11.1				
	CMP63M	I_{max} [%xI_N]			250	250	203		
		M_{max} [Nm]			15.8	19.4	20.3		
	CMP63L	I_{max} [%xI_N]			250	250	250	173	
		M_{max} [Nm]			17.9	23.3	26.8	27.2	

Table continued on next page.

n_N [min^{-1}]	Motor		MOVIAXIS® MX						
			Size 1			BG2		BG3	
		I_N [A]	2	4	8	12	16	24	32
		I_{max}[A]	5	10	20	30	40	60	80
6000	CMP40S	I_{max} [%xI_N]	250	153					
		M_{max} [Nm]	1.7	1.9					
	CMP40M	I_{max} [%xI_N]	250	173					
		M_{max} [Nm]	2.9	3.4					
	CMP50S	I_{max} [%xI_N]	250	225					
		M_{max} [Nm]	3.5	5.1					
	CMP50M	I_{max} [%xI_N]		250	241				
		M_{max} [Nm]		7	9.7				
	CMP50L	I_{max} [%xI_N]		250	250	217			
		M_{max} [Nm]		7.4	12.1	13.8			
	CMP63S	I_{max} [%xI_N]		250	250	195			
		M_{max} [Nm]		6.9	11.1	12			
	CMP63M	I_{max} [%xI_N]			250	250	250	173	
		M_{max} [Nm]			13.9	18.5	21.6	21.9	
	CMP63L	I_{max} [%xI_N]			250	250	250	233	
		M_{max} [Nm]			14.6	20.2	24.6	29.3	

10 Appendix

10.1 Appendix A: Abbreviations and unit designations

Abbreviation	Definition	Meaning
DIN	**D**eutsches **I**nstitut für **N**ormung e.V. (German institute for standardization)	
EN	**E**uropäische **N**orm (European standard)	
ISO	**I**nternational **O**rganization for **S**tandardization	The ISO creates ISO standards that should be adopted unrevised by the member states.
SW	**S**chlüssel**w**eite (Wrench size)	
PSF	Planetary gear unit [**P**lanetary **S**ervo **F**lange]	

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Germany			
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	Lyon	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
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Algeria			
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Austria			
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Belgium			
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Brazil			
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Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 4322-99 Fax +237 4277-03

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	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Street LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
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Chile			
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Morocco			
Sales	**Casablanca**	S. R. M. Société de Réalisations Mécaniques 5, rue Emir Abdelkader 05 Casablanca	Tel. +212 2 6186-69 + 6186-70 + 6186-71 Fax +212 2 6215-88 srm@marocnet.net.ma

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New Zealand			
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	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

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Peru			
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Portugal			
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Romania			
Sales **Service**	**Bucuresti**	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly **Sales** **Service**	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 849 47-70 Fax +221 849 47-71 senemeca@sentoo.sn

Serbia and Montenegro			
Sales	**Beograd**	DIPAR d.o.o. Kajmakcalanska 54 SCG-11000 Beograd	Tel. +381 11 3088677 / +381 11 3088678 Fax +381 11 3809380 dipar@yubc.net

Singapore			
Assembly **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 sewsingapore@sew-eurodrive.com

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybnicna 40 SK-83107 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 http://www.sew.sk sew@sew-eurodrive.sk
	Zilina	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Zilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk

Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 dross@sew.co.za

South Africa			
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za

Spain			
Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 sew.spain@sew-eurodrive.es

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch

Thailand			
Assembly **Sales** **Service**	**Chon Buri**	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.co.th

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service 7, rue Ibn EI Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76

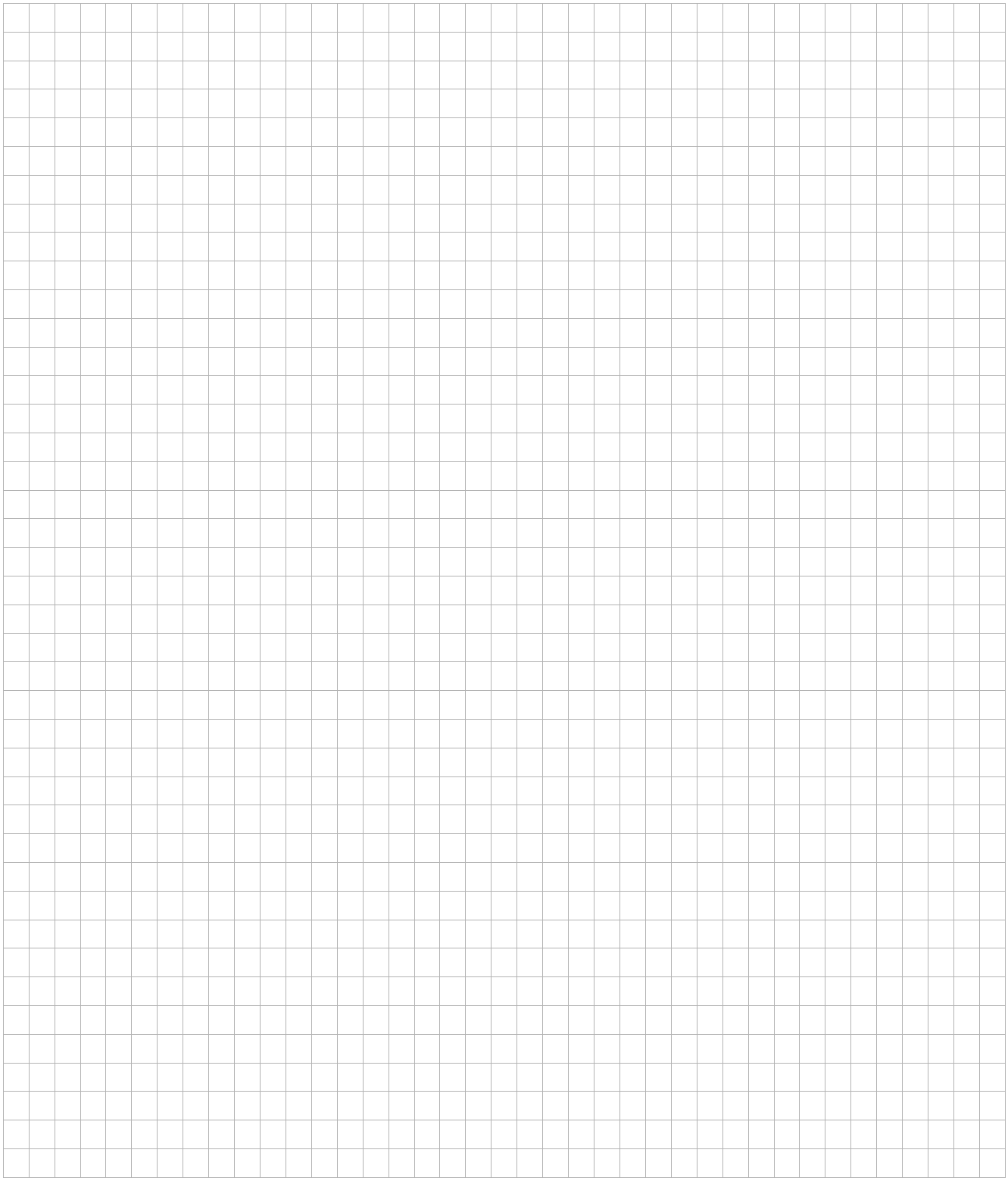
Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419163 + 216 4419164 + 216 3838014 Fax +90 216 3055867 sew@sew-eurodrive.com.tr

Ukraine			
Sales **Service**	**Dnepropetrovsk**	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 sew@sew-eurodrive.ua

USA			
Production **Assembly** **Sales** **Service**	**Greenville**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**San Francisco**	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com

USA			
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 sewventas@cantv.net sewfinanzas@cantv.net



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With people who think fast and develop the future with you.

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With drives and controls that automatically improve your productivity.

With comprehensive knowledge in virtually every branch of industry today.

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